

VIII. Importance of Integrated Programs

All of the major agencies of today's USDA were in existence by the 1930s. For example, the Department's field operations, a national network of county offices, arose out of the New Deal imperative to establish a Federal presence in local areas, as a matter of politics but also to facilitate program delivery for farm, conservation, and rural infrastructure services. Some of the research, economic, and statistical agencies trace their roots to the 1800s.

Just because agencies are old doesn't mean they have outlived their original purposes. Indeed, the missions of these agencies—to secure the well-being of American consumers, farmers, and rural resi-

dents—are as meaningful today as in 1930. But changing circumstances strongly suggest the need for contemporary reflection on the program delivery needs of the future.

USDA remains organized as a traditional hierarchy, with authority and responsibility flowing directly through each agency, from the Secretary to administrators to State and regional levels and to field operations, where they exist. This configuration creates “stovepipes,” in which all goals, policies, resources, and administrative functions are contained within the confines of individual parallel organizational structures. As PricewaterhouseCoopers observed in a recent report to the Department, “...the stovepipe structure poses problems for contemporary management approaches because it runs counter to an organization's core business processes, which are usually aligned horizontally and cross-functionally. In a traditional hierarchy, processes and people are trapped inside their functional stovepipes—those tall, thin structures with physical or theoretical walls that prevent full cooperation and communication.” These stovepipes can be a big impediment to better integration of program management and improved service delivery.

The issues facing the modern food and farm system today are so multifaceted and complex that they cannot be solved by any one program or approach. Protecting against plant and animal pests and diseases, or eliminating emerging foodborne pathogens, or overcoming the barriers to producing bioenergy efficiency, or ensuring nutritious food for low-income households, or encouraging cost-effective carbon sequestration on farms and in forests—none of these can be accomplished by any single agency. Solutions require many agencies working together, sharing their diverse human and physical resources.



Emerging Technologies: Geographic Information Systems (GIS): Better integration for better decisions

From firefighting to farm program compliance to food safety, the use of GIS technology has dramatically improved the ability of program staff to make good decisions and provide better customer service. In the strictest sense, a GIS is a computer system capable of assembling, storing, manipulating, and displaying geographically referenced information, i.e., data identified according to their locations.

Images produced with a GIS—including maps and animations—allow policymakers, land managers and others to view their subjects in ways that literally never have been possible before. GIS technology can be used for scientific investigations, resource management, and development planning. For example, a GIS might allow emergency planners to calculate emergency response times in the event of a natural disaster, or a GIS might be used to find wetlands that need protection from pollution. The changes in crop growth through a growing season can be animated to determine when drought was most extensive in a particular region. Working with two factors that vary by location and over time allows researchers to detect regional differences in the lag between a decline in rainfall and its effect on vegetation. These analyses are made possible both by GIS technology and by the availability of digital data on local, regional, and global scales. The volume of data with spatial associations has expanded dramatically over the

past decade, and more will follow, generating ever greater amounts of data. GIS and related technology will help greatly in the management and analysis of these large volumes of data, allowing for better understanding of climatic, terrestrial, and aquatic processes, and the linkages in those processes.

The use of GIS can be an important tool in efforts to:

- Improve agricultural productivity. Precision agriculture and crop anomaly detection depend critically on field-level information. The usefulness of information on agricultural status and trends is enhanced with spatial variation.
- Improve environmental stewardship. Environmental analysis, pattern and population density analysis, natural resource management, ecosystem restoration (especially for migratory species), resource inventory and assessment, watershed and water quality assessment, conservation planning, recreation planning and management, and compliance implementation all benefit from the use of spatially referenced data and the use of a GIS to illuminate relationships between environmental quality and resource conditions and the management practices that affect them.
- Protect food safety and reduce animal diseases. For example, surveillance of spatially based diseases, regionally based health surveys, epidemiological surveillance of foodborne diseases and microbial risk assessment support for food safety are all enhanced with the use of a GIS.
- Improve rural community planning. Community planning and development are enhanced with the use of spatial information on changes in demographics and infrastructure.
- Improve emergency response. Improved fire response and recovery, protection of firefighters, natural disaster response and recovery, disaster assessment, risk assessment, and risk education are among the early uses of GIS and have tremendous potential for further advances. Early warning systems can reduce damages from disasters and improve agricultural disaster response programs.
- Improve record keeping for improved program implementation. Geographic/demographic allocation of resources and program and policy evaluation depend critically on good records and can be enhanced with a better integrated and spatially explicit data set including information such as land ownership surveys, recordation and administration, and land and farm practice records management.

As this cooperation continues to improve, we must also ensure that resources are coordinated to enhance the technology and technical knowledge of agency personnel. The information technology revolution has created possibilities that we have only begun to imagine. One example involves geographic information systems (GIS), which have tremendous potential to improve the quality of information available to guide decision making by farm and forest managers, agency personnel, and policymakers, and to improve public health and safety and protect the environment (see box).

Increasingly, the technology available to solve many program and policy problems also requires resources from multiple agencies. To use GIS to its best advantage requires the systems to be constructed with many diverse data sets—or data layers—which are maintained by a variety of agencies. Unfortunately, agencies often develop and maintain these data sets using their own definitions and conventions, which can make them inconsistent with one another and costly, or even impossible, to use in GIS. For example, trying to merge data sets on soil characteristics, farm program participants, crop insurance participation, and crop production levels, runs afoul of different farm and field definitions and boundaries.

While the multidimensional nature of the issues, and the technologies needed to address them, cry out for more integrated program delivery, customers also are demanding more comprehensive service. A customer today often has an interest in more than one USDA or other Federal program, and can be thwarted in obtaining efficient service if the “stovepipes” of the organization are inflexible. Fortunately, a number of approaches can be taken to substantially reduce the negative effects of a stovepipe organization, even without major, additional restructuring. These include: one-stop shopping for delivery of serv-

ices to rural America; sharing and integration of data bases and information, and computation environments across agencies and programs; and new flexibility for increased coordination of resources.

Delivering Services

Attention must be paid to the overall structure used by USDA and its Federal and State partners to deliver services to its customers, particularly in rural America. In recent years, USDA has made progress in streamlining its rural office structure while maintaining or improving customer service. Field offices of the Farm Service Agency, Natural Resources Conservation Service, and Rural Development mission area have been colocated. Staffing levels have been reduced, over 1,000 offices have been closed, and investments in new technology have improved local office efficiency.

Further actions are necessary to ensure that the USDA farm service structure is appropriately sized, configured, and located for efficient provision of the new services demanded by a rapidly evolving food and agriculture system. Interagency cooperation will be especially critical in moving from simple collocation of agency personnel to actual “one-stop shopping” for rural American customers of the Federal Government. And there is still much to be done to advance the information technologies that link service operations among agencies.

The concept of “one-stop shopping” has arisen as a notion that is applicable to the farmer seeking information on farm loans and on conservation practice cost-shares as it is to the single mother inquiring about her eligibility for food stamps and for income support. Advances in information technology may allow agencies to break through stovepipes at a very low cost, sharing key data so that customers are spared the bur-

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den of providing the same information to multiple Federal offices. Notwithstanding any other organizational reforms, these information-sharing initiatives should accelerate the integration of program management and delivery.

Taking Advantage of Information Technology

Key to the success of service center modernization is the replacement of the aging business and technology systems of partner agencies with a common computing environment that will allow sharing of data and implementation of streamlined business processes. Information shared among agencies will reduce the redundant requests made of customers participating in multiple programs, as well as customer office visits and paperwork burden, and allow agencies to operate efficiently at lower staffing levels. This effort will provide the infrastructure needed to meet the legislative requirement in the Freedom to E-File Act that customers be able to do business electronically with the service center agencies by June 2002.

Innovation in electronic government can improve the quality of service provided directly to citizens, and it can also support improvements in agency planning and decisionmaking. Gains may arise when agencies are able to acquire data relevant to policy formulation and program delivery. However, the need for the Nation's food and fiber system to respond to the new consumer demands—ranging from environmental quality to food safety to energy—raises questions, not just about the relevance of the data to public and private sector decisionmakers, but also about whether information technologies are able to manipulate data from diverse

sources into useful formats that can be shared across agencies.

The new information needs that are arising with change in the food sector clearly call for better integration of data collection, storage, and use. For example, advances in molecular biology have created the need for data bases to store sequencing, mapping, and functional genomics data for plants, animals, and microbes. Public research agencies can help make "bio-information" available broadly, but doing so requires a new effort in data base and information analysis tools.

Assurance that data being collected by USDA meet contemporary decisionmaking needs *across* the many functions of the Department can only come from a review that crosses all lines of the Department's organization. USDA needs to commission a comprehensive effort to inventory current data collection efforts and to align them with an assessment of future data requirements. Integration of data bases across agencies and programs would then be easier.

Recently, seven USDA agencies (the World Agricultural Outlook Board, Economic Research Service, Agricultural Marketing Service, Farm Service Agency, Foreign Agricultural Service, National Agricultural Statistics Service, and Cooperative State Research, Education, and Extension Service) engaged an outside consultant to help streamline the interagency collaboration that produces monthly estimates and forecasts of key commodity market prices, production, stocks, and use. The review prompted a commitment to boost agency analysts' problem solving abilities through capturing knowledge in systems and software. Electronic discussion forums, data bases, and document management systems can improve access to information across agencies.

Commensurate opportunities likely exist in other parts of the



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Department, and need to be identified. Although the payoff to such efforts is potentially very large, agency funds for supporting such studies are scarce. It might be appropriate to provide the authority to pool funds across agencies for the express purpose of conducting such studies and implementing recommendations.

Increasingly, regulatory agencies, working with business firms, other countries, and government colleagues, require the use and knowledge of advanced technologies and new science. For assistance, they must draw on the expertise of researchers in USDA science agencies and also at federally supported land-grant universities. Better understanding of the science of food safety, of environmental protection,

and of human nutrition, to name but a few areas of advance, can be applied directly to the management and delivery of key Federal services. Increasingly, researchers are called upon to ensure that sound science undergirds the decisions of public officials, a departure perhaps from the days when the main role of science in agriculture was to underpin advances in farm productivity. Clearly, that contribution is as important as ever, but the expanded use of science in farm and food policy and program management multiplies the demands on researchers.

In business parlance, research would be called a "back room" function, one that supports the delivery of many services and activities. A major factor in the success of Walmart was the integration of such functions for its stores across the country. Instead of each store having its own separate accounting system, for example, all use one central accounting resource, thereby saving money but also allowing a better flow of financial information through the store network. In the same way, a single focus for research in the Department can effectively serve multiple agency needs. The 1994 reorganization recognized the value of this approach in creating the Research, Education, and Economics mission area (comprised of the Agricultural Research Service; Cooperative State Research, Education, and Extension Service; Economic Research Service; and National Agricultural Statistics Service).



Principles for Program Integration

- **Support collaboration to solve problems.** Recognize that the complexities of many contemporary agricultural issues cross the bounds of traditional program areas.
- **Encourage a coordinated view of functions and services.** Institute a range of practices, including “one-stop shopping” for USDA services, common electronic work environments, consistent data convention across agencies, data sharing, and increased resource flexibility among agencies, that encourage a “corporate” rather than a fragmented view toward program implementation.
- **Pursue partnership opportunities.** Continued and increased cooperation and partnership opportunities need to be sought with program beneficiaries, Congress, consumers, industry, NGOs, Federal and non-Federal government agencies, universities, and others.
- **Sustain capacity for integrated responsiveness.** The latest technologies are needed to support integrated programs and “corporate” systems. A cadre of highly trained and actively practicing scientists, economists, and other analysts provides a necessary foundation for rapid response across subject areas and programs.